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1. [Text]

2. 13th Microelectronics Component Symposium

3. In keeping with tradition, the 13th component symposium focusing on microelectronics was held in May in Frankfurt/Oder. The sports and exhibition center at Westkreuz was again used. The organizers were the Microelectronics Combine and the Chamber of Technology of Frankfurt/Oder. The symposium was held under the patronage of Minister for Electrical Engineering and Electronics Felix Meier. After the plenary speeches by the minister for electrical engineering and electronics and by the Microelectronics, Carl Zeiss Jena, Robotron, Automation System Construction, and Communications Electronics Combines, the 2,400 participants were offered a program of 56 technical presentations about new components and their application.

4. Exchanging experiences is assuming an ever-greater importance at the component symposium. The exhibit area, measuring 1,200 m², with 850 components on display and 195 exhibits by user industries, academies, and colleges, as well as the podium discussions and the poster debates, provided adequate opportunity to do so.

5. Of particular interest were the integrated circuits from the U 80600 and U 84C00 microprocessor systems (first exhibited at the

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Leipzig Spring Fair), the U61000 1-Mbit DRAM [dynamic random-access memory] and the U 5300 and U 1600 application-specific circuit systems. The U 6264 8-kbyte SRAM [static random-access memory], the U 2764 8-kbyte EPROM [electrically programmable read-only memory], and the fast U74HCT CMOS [complementary metal-oxide semiconductor] logic family were presented, and experiences in using surface-mountable components were conveyed.

6. We provided you with detailed information on the U 80600 16-bit microprocessor system in MIKROPROZESSORTECHNIK No 5, 1989; in this issue, we will present the U 61000 1-Mbit DRAM and the U 84C00 8-bit CMOS processor in greater detail.

7. The announcement of an accelerator card based on the U 80601 should be of interest to users of the EC 1834. The BK 600--also call a turbo card--makes it possible to accelerate the computing speed of the EC 1834 by three to four times. Where a coprocessor is used, a factor of five to eight is even possible. The card represents a complete subsystem that in the EC 1834 can be inserted in place of the RAM expansion. It handles processing of all operating system, driver, and user programs, whereby the original processor system continues to be used as a slave system. This ensures access to all system resources. The RAM area of the EC 1834 can thus be used as a disk cache for hard and floppy disks. The component basis for the turbo card, which is the result of joint work by the Microelectronics and Robotron Combines, are the U 80601, U 80613, DS 224, U 80606, U 41256-15, U 214 D, and U 6514 D circuits and the DL and DS logic array.

8. Of the exhibits on display at the fair, we have selected a few that we would like to present here in brief.

9. The **Wilhelm Pieck University** in Rostock, Department of Technical Electronics, displayed the SBC-WPU-80601 16-bit single-board computer. The SBC in DKL technology, measuring 233 mm x 330 mm, was presented with the following circuits: 80286 CPU [central processing unit], 82284 clock, two 82288 bus controllers, 82289 bus arbiter, 80287 math processor, two 8259A interrupt controllers, V.24/IFSS interface with USART 8251A, 8253 timer, four 6264...62256 static RAMs, and four 2764...27256 EPROMs. The SBC-WPU-80601 constitutes the central unit in a modular system with MMS-16 global and local bus and SBX bus with SCSI [small computer system interface] adapter. Moreover, system-specific additions were introduced: Graphics module with 82720 and MMS-16 bus, Winchester controller with 82062 and SBX bus. In function, the console coupling of the SBC with the SCSI interface was presented. The software consists of the 957B monitor with expansions, SCP [system control program] and DCP [data control program] in the CPU's real address mode. With examples, the

functional principle of protected mode was shown. The graphics module permits a display of 800 x 800 pixels, and a demo on the color monitor illustrated a new level of quality in terms of resolution and representation.

10. The Center for Scientific Equipment Building of the Academy of Sciences offered a 4-Mbyte RAM floppy card and the VIS 3 video drive. The 4-Mbyte RAM floppy is well-suited for expanding the memory of the EC 1834 as well as that of compatible computers after EMS 3.2 (see also MIKROPROZESSORTECHNIK No 3, 1989, p 89). It can serve as fast data memory for recording measurements or as cache memory for hard disk access. The parity check is ensured with the obligatory memory units of 9 bits per byte. Support through an external voltage feed and autorefresh are possible. The card has U 61000 CC12 1-Mbit DRAMs (access time 120 ns); the variation with 1 Mbyte was on display. The VIS 3 is used to drive color monitors that can be used as full graphic displays for image processing and for computer graphics. In particular, it is suitable for applications where an existing 8-bit microprocessor system is to be supplemented by a graphics-capable, color image-output system. The VIS 3 was already introduced in great detail in MIKROPROZESSORTECHNIK No 3 and 11, 1988.

11. In order to relieve the design centers, and because the design of application-specific integrated circuits (ASICs) in the design centers is not effective for each user, there is an increase in demand for design with the PC. The parts design work station at the Technical University of Karl-Marx-Stadt for the EC 1834 demonstrated the PC-GAD design system (Technical University of Karl-Marx-Stadt) and MELGET (Metallurgy Electronics, Leipzig) for designing the U 5200 and U 5300 gate array systems. The PC-GAD, which is compatible in network-description and command language to the ARCHIMEDES system for the K 1840, allows the design and simulation of circuit elements with up to 300 macros. Further information about this can be found in our ASIC series in MIKROPROZESSORTECHNIK No 3, 6, and 9, 1989.

12. In the 3 years of its existence up to the beginning of this year, the Integrated Circuit Center at VEB Textima Electronics, Karl-Marx-Stadt, has performed design work on 30 U 5200/5300 gate array circuits and on five U 1500/1600 standard cell circuits. At the symposium, the Integrated Circuit Center provided information on logic cell arrays (LCAs), with which the development time of printed circuit boards can be sharply reduced. Where quantities are small, they can also fully replace ASICs. LCAs--similar to EPROMs--are programmed on the PC and used like ASICs. In this way, LCAs are highly flexible. They are easy to change and to test; reprogramming is possible in a few minutes. LCAs consist of a number of configurable logic blocks (flip flops and complex combinatorial logic functions). There are input/output blocks for communicating with the

environment. All the blocks can be connected to each other, with no limitations. A software package contains components such as graphics editor, interactive computation of signal running times, macro cell libraries, automatic positioning and routing, as well as dynamic simulation support.

13. Component symposia have been held in Frankfurt/Oder since 1966. To this day, they are application-oriented events that are unique in the GDR in terms of size and significance. With the wide range of information options, including the sale of informational material and of components, the symposium fully lived up to its reputation as the most important source of information for all users of integrated circuits in the GDR.